

We claim:

1. A process for preparing synthetic hydrocarbons, which comprises the oligomerization of 1-olefins having from 8 to 30 carbon atoms in the presence of boron trifluoride and at least one protic activator compound A1, wherein the reaction is carried out in the presence of at least one further compound selected from among:
 - aprotic organic compounds A2 which are selected from among ethers, comprising at least one ether oxygen atom, and
 - halogenated hydrocarbons having from 1 to 6 carbon atoms and 1, 2 or 3 halogen atoms,where the molar ratio of boron trifluoride to the total amount of compounds A1 and A2 is in the range from 0.8:1 to 4:1, wherein the absolute pressure of boron trifluoride in the reactor does not exceed a value of 1.3 bar.
2. A process as claimed in claim 1, wherein the oligomerization is carried out at a boron trifluoride concentration below the saturation concentration of boron trifluoride in the reaction mixture at a BF_3 pressure of 1 bar and the reaction temperature.
3. A process as claimed in either of the preceding claims, wherein the concentration of boron trifluoride in the reaction mixture is in the range from 0.5 to 2% by weight.
4. A process as claimed in any of the preceding claims, wherein the activator compound A1 is selected from among alkanols having from 1 to 10 carbon atoms.
5. A process as claimed in any of the preceding claims, wherein the compound A2 is selected from among dialkyl ethers having at least 5 carbon atoms.
6. A process as claimed in any of the preceding claims, wherein the oligomerization is carried out in the presence of from 2 to 20% by weight, based on the total weight of the reaction mixture, of at least one chlorinated hydrocarbon.

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7. A process as claimed in any of the preceding claims, wherein the oligomerization is carried out in the presence of a compound A2 and the molar ratio of compound A1 to compound A2 is in the range from 5:1 to 1:20.
- 5 8. A process as claimed in claim 7, wherein the mean number of carbon atoms in the compounds A1 and A2, weighted according to the mole fractions of A1 and A2, is in the range from 4 to 7.
- 10 9. A process as claimed in claim 8, wherein the activator compound A1 is selected from among alkanols having from 2 to 6 carbon atoms.
- 15 10. A process as claimed in any of claims 1 to 7, wherein the type and amount of compound A1, if desired A2 and if desired the type and amount of the chlorinated hydrocarbon are selected so that phase separation into a first phase having a high BF_3 concentration and a second phase having a low BF_3 concentration occurs, with the solubility of BF_3 in the second phase being less than 1% by weight, based on the weight of the second phase.
- 20 11. A process as claimed in claim 10, wherein the activator compound A1 is selected from among water, methanol and hydrogen fluoride and the further compound or compounds is/are selected from among dialkyl ethers having from 5 to 10 carbon atoms as compound A2.
- 25 12. A process as claimed in claim 11, wherein the molar ratio of compound A1 to compound A2 is in the range from 1:2 to 1:20.
- 30 13. A process as claimed in claim 10, wherein the oligomerization is carried out in the absence of a compound A2 and the compound A1 is selected from among ethanol, isopropanol and n-propanol.
- 35 14. A process as claimed in any of the preceding claims, wherein at least 90% by weight of the 1-olefins used for the oligomerization comprises structural units of the formula $(\text{CH}_2)_n$, where n is an integer of at least 5.
- 40 15. A process as claimed in claim 14, wherein at least 90% of the 1-olefins used for the oligomerization is selected from among unbranched α -olefins and 2-methyl- α -olefins.
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16. A process as claimed in any of the preceding claims, wherein the 1-olefins to be oligomerized have from 8 to 12 carbon atoms.
- 5 17. A process as claimed in any of the preceding claims, wherein the 1-olefins to be oligomerized comprise at least 90% by weight of 1-decene.
18. A process as claimed in any of the preceding claims, wherein
10 the 1-olefins to be oligomerized comprise at least 90% by weight of 1-dodecene.
19. A process as claimed in any of the preceding claims, wherein the oligomerization is carried out at from -20 to +40°C.
- 15 20. A process as claimed in any of the preceding claims, wherein the oligomerization product is subjected to a catalytic hydrogenation.
- 20 21. A synthetic hydrocarbon obtainable by a process as claimed in any of claims 1 to 20.

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